

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RESEARCH DEVELOPMENT TEST &amp; EVALUATION, NAVY / BA-4</b>					R-1 ITEM NOMENCLATURE 0603216N Aviation Survivability			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost		20.359	21.628	10.820	5.878	6.315	6.440	6.567
W0584 Aircrew Protective Clothing and Devices		2.758	3.827	2.441	2.457	2.482	2.530	2.580
W0591 Aircraft Survivability, Vulnerability and Safety		1.873	7.408	6.543	1.558	1.582	1.616	1.646
W0592 A/C & Ordnance Safety		1.966	1.346	1.248	1.266	1.517	1.546	1.577
W1819 Carrier Vehicle Aircraft Fire Suppression		0.921	0.740	0.588	0.597	0.734	0.748	0.764
W9034 Modular Helmet and Display Development		1.443						
W9169 Aviation Integrated Life Support System		5.062						
W9170 Modular Advanced Vision System		1.724	2.374					
W9171 Naval Aviation Network Centric		1.730						
W9172 Advanced Aircraft/Explosion Protection		0.964						
W9173 Rotorcraft External Airbag		1.918	3.461					
W9346 Equipment Life Extension Program			2.472					
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Aviation Survivability addresses the issues of aircrew and platform survivability, focusing on enhancing overall opportunity for aircrew and platform protection and enhanced performance. The capabilities addressed under this program element counter emerging threats of next generation operational weapons systems and enhance combat effectiveness in future operational mission scenarios. (U) Aircrew Protective Clothing and Devices develops, demonstrates, and validates technology options that enhance aircrew capability to perform assigned missions. In addition, this project ensures aircrew protection against natural and induced environmental or physiological hazards encountered during routine, combat and emergency flight operations as well as during escape, and survival and rescue, following loss of aircraft.								

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<p>(U) Projects W0591, W0592, and W1819 focus on platform survivability, addressing the reductions in aircraft susceptibility to enemy and non-combat threats, as well as aircraft vulnerabilities to conventional, nuclear, chemical, biological, radiological and directed energy weapons. The Aircraft Survivability, Vulnerability and Safety project expands the survivability technology base and develops prototype hardware which is required to improve the survivability of Naval aircraft. Aircraft and Ordnance Safety transitions generic insensitive munitions technology to Navy and Marine Corps air weapons, ensuring that they are insensitive to fast cook-off, slow cook-off, and fragment impact and sympathetic detonation. Carrier Aircraft Fire Suppression Systems develops improved fire fighting systems and fire protective measures for aircraft carriers. Project W9034 reflects a Congressional Add that will complete development of the low resolution Crusader modular helmet, and begin development of an enhanced Advanced Helmet Vision System. Project W9169 reflects a Congressional Add that will be used to develop an approach to pass SAILSS (Smart AILSS) sensor cables through the Joint Service Air Mask (JSAM) and Joint Protective Aircrew Ensemble (JPACE) without compromising CB protection. The project will also determine the impact of added head mass on head/neck moments of inertia. Testing and development of system level devices will be conducted in dynamic, flight simulators, in order to develop realistic design goals. Project W9170 reflects a Congressional Add that will support the shift from traditional cathode ray tube (CRT) based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. As part of the design goals, the ability to add fixed line laser eye protection to the visor assembly will be explored. Project W9171 reflects a Congressional Add that will provide support to the principles of network centric warfare (NCW) which will be applied to leverage the power of shared information and knowledge to deliver end-to-end combat capabilities spanning from Space-to-Seabed and Sea-to-Land. Project W9172 reflects a Congressional Add that will be used to develop a stand-alone modeling, simulation, test and evaluation capability to assess aircraft fire/protection and extinguishing systems. This capability does not exist in any other DoD or University laboratory. Project W9173 reflects a Congressional Add that will address the level of protection afforded and feasibility of an external airbag. Rotorcraft application will require larger airbags integrated into the aircraft and development of "predictive" crash sensors. Initial impact studies (water and ground) have already been conducted. Joint efforts with the Army for aircrew systems are already underway. Project W9346 reflects a Congressional Add that will fund an equipment life extension laboratory for definition of systems no longer procurable but critical to functionality of weapons systems.</p>		

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EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		2.758	3.827	2.441	2.457	2.482	2.530	2.580
RDT&E Articles Qty								

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:** Project W0584 develops, demonstrates, and validates technology options for integrated aircrew emergency and life support systems designed to enhance mission effectiveness, in-flight protection and survivability. The project covers fixed and rotary wing life support equipment, advanced helmet vision systems, escape systems technology, crew centered cockpit design, and cockpit integration programs. It responds to a number of operational requirements documents, including OR# 210-05-88 for Chemical and Biological (CB) Protection, OR#099-05-087 for Laser Eye Protection, and the joint Air Force/Navy (CAF 208-93) for an Aerospace Control Helmet Mounted Cueing System. In 1996, the various sub-projects were restructured into a combined Advanced Technology Crew Station (ATCS) and Advanced Integrated Life Support System (AILSS) program. This project is validated by two Non-Acquisition Development Documents (NAPDDS)-- one for an ATCS, and the other for AILSS.

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Avation Survivability	PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices	
<b>B. Accomplishments/Planned Program</b>			
	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.268	1.760	1.123
RDT&E Articles Quantity			
<div style="border: 1px solid black; padding: 5px;"> <p><b>Advanced Integrated Life Support System (AILSS) program.</b> Exercise option to begin the development of frequency Agile flight worthy unity magnification goggles (laser eye protection). Laboratory and field testing of Agile flight worthy goggles prototypes. Focus on alternative materials and optical design to maximize performance. Finalize unity magnification frequency Agile flight worthy goggles and ready for EMD transition. Integrate Smart Advanced Integrated Life Support System (SAILSS) with on-board oxygen and personal air conditioning systems. Integration of SAILSS with focus on imbedded microsensors and personal air conditioning system. Tactical variant of AILSS (TAILSS), move SAILSS into final phases of laboratory testing. Crewstation technology laboratory demonstration of Active Network Guidance Emergency Logic (ANGEL). System integration laboratory demonstration of ANGEL. Combine flight testing of on board/off board data correlation and ANGEL.</p> </div>			
	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.490	2.067	1.318
RDT&E Articles Quantity			
<div style="border: 1px solid black; padding: 5px;"> <p><b>Advanced Technology Crew Station (ATCS) program.</b> System integration and flight testing of Advanced Helmet Vision System enhanced resolution Crusader. I2/Thermal mode control studies. Pilot Vehicle Interface (PVI) on-board/off board data correlation on test aircraft and began flight testing. Advanced Technology Escape System (ATES) ejection seat trajectory and crashworthy seat stroke models with biodynamic models exploring various integrated aircrew head/neck protection configurations for ejection safe helmet mounted systems. Incorporate computational fluid dynamics and parachute models. Preliminary ergonomic seating design, validated BioRID performance and mature final version. Incorporate models of helmet mounted displays into the PVI to support testing and validation of on board/off board data correlation. Horizontal accelerator/vibrating platform assessment of ergonomics, posture, and crashworthiness. Development of Charge Coupled Device (CCD) based, high resolution Advanced Helmet Vision System (follow on to the low resolution Crusader HMD). Integrate results of injury prevention research into protective equipment to include helmet mounted devices and into ejection seat design for improved seal performance, retention, and safety. Development and testing of side facing seat and improved restraint system. Focus on shock and vibration work.</p> </div>			

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**C. PROGRAM CHANGE SUMMARY:**

	FY 2003	FY 2004	FY 2005
Funding:			
Previous President's Budget:	2.831	2.870	2.444
Current BES/President's Budget	2.758	3.827	2.441
Total Adjustments	-0.073	0.957	-0.003
Summary of Adjustments			
Congressional program reductions			
Congressional undistributed reductions		-0.043	
Congressional rescissions			
SBIR/STTR Transfer	-0.008		
Economic Assumptions			-0.003
Other Navy/OSD Adjustments			
Reprogrammings	-0.065		
Congressional increases		1.000	
Subtotal	-0.073	0.957	-0.003

Schedule:

Not Applicable

Technical:

Not Applicable.

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices				
<b>D. OTHER PROGRAM FUNDING SUMMARY:</b>									
<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
(U) PE 0602201F (Aerospace Flight Dynamics)									
(U) PE 0602233N (Mission Support Equipment)									
(U) PE 0604264N (Aircrew Systems Development)									
(U) PE 0604706F (Life Support Systems)									
(U) PE 06023231F (Crew Systems and Personal Protection Technology)									
<b>E. ACQUISITION STRATEGY:</b>									
Not Applicable									
<b>F. MAJOR PERFORMERS:</b>									
Not Applicable									

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Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management	Various	Various	1.986	0.519	Various	0.727	Various	0.448	Various	Continuing	Continuing	
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			1.986	0.519		0.727		0.448		Continuing	Continuing	

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**Exhibit R-3, Project Cost Analysis**  
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Exhibit R-3 Cost Analysis (page 2)									DATE: February 2004			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W0584 Aircrew Protective Clothing and Devices						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various	15.856	1.015	Various	1.369	Various	0.882	Various	Continuing	Continuing	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			15.856	1.015		1.369		0.882		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River	0.105	0.010	10/02	0.020	10/03	0.010	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.105	0.010		0.020		0.010		Continuing	Continuing	
Remarks:												
Total Cost			51.039	2.758		3.827		2.441		Continuing	Continuing	
Remarks:												

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EXHIBIT R4, Schedule Profile																				DATE:				February 2004								
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RDT&E, N / BA-4										0603216N Aviation Survivability										W0584 Aircrew Protective Clothing and Devices												
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
<b>Program Milestones</b>																																
Agile Laser Eye Protection																																
Unity Magnification Goggle																																
Intensified Unity Mag Goggle																																
Advance Helmet Vision System (AHVS)																																
Crusader																																
Visually Coupled Display (high resolution)																																
Adanced Integrated Life Support System (AILSS)																																
Tactical AILSS (TAILSS)																																
Smart AILSS (SAILSS)																																
4th Generation Escape																																
Crashworthiness & Improved Restraint System																																
Injury Prevention																																
Pilot Vehicle Interface (PVI)																																
On Board - Off Board Data Correlation																																
<b>T&amp;E Milestones</b>																																
Crusader laboratory testing																																
ANGEL																																
Advanced Technology Crew Station (ATCS)																																

\* Not required for Budget Activities 1, 2, 3, and 6

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**Exhibit R-4, Schedule Profile**  
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**Exhibit R-4a, Schedule Detail**  
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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		1.873	7.408	6.543	1.558	1.582	1.616	1.646
RDT&E Articles Qty			2	23				

### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Aircraft Survivability, Vulnerability and Safety. This project develops prototype hardware to improve the survivability of Navy and Marine Corps aircraft. This project addresses the likelihood of an aircraft being hit (susceptibility) and the probability of a kill if the aircraft is hit (vulnerability). Types of programs funded under this project include signature reduction efforts, subsystem and component hardening and development of fire and explosion suppression techniques for fuel systems and the Military Flight Operations Quality Assurance (MFOQA).

RDT& E,N test articles include Military Flight Operations Quality Assurance (MFOQA) units.

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**Exhibit R-2a, RDTEN Project Justification**  
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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety																	
<b>B. Accomplishments/Planned Program</b>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 10%;"></td> <td style="width: 15%; text-align: center;">FY 03</td> <td style="width: 15%; text-align: center;">FY 04</td> <td style="width: 15%; text-align: center;">FY 05</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">1.417</td> <td style="text-align: center;">0.100</td> <td style="text-align: center;">0.000</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		1.417	0.100	0.000	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		1.417	0.100	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> <p><b><u>Unmanned Aerial Vehicles (UAV) Survivability Enhancement Program (SEP):</u></b>            This program will develop and test survivability enhancements for UAV platforms. Included are Advanced Insulated Exhaust Systems, Situational Awareness Systems, Self-sealing polymers, and acoustic signature reduction.</p> </div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 10%;"></td> <td style="width: 15%; text-align: center;">FY 03</td> <td style="width: 15%; text-align: center;">FY 04</td> <td style="width: 15%; text-align: center;">FY 05</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">0.154</td> <td style="text-align: center;">1.308</td> <td style="text-align: center;">0.963</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.154	1.308	0.963	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.154	1.308	0.963															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> <p><b><u>Transport/Reconnaissance Survivability Enhancement Program (TR/SEP):</u></b>            This program will develop and test survivability enhancements (i.e., Infrared (IR) engine suppression, new ballistic armor and fire protection) for transport and reconnaissance aircraft to include KC-130J, P-3/MMA, E-6B and others. FY 02/03 work determined system requirements and technology suitable for demonstration. Fabrication, integration and test will occur in FY 04/05.</p> </div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 10%;"></td> <td style="width: 15%; text-align: center;">FY 03</td> <td style="width: 15%; text-align: center;">FY 04</td> <td style="width: 15%; text-align: center;">FY 05</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">0.250</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.250	0.000	0.000	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.250	0.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> <p><b><u>Advanced Fire Protection:</u></b>            This program leverages from the Next Generation Propellant Program by demonstrating that previously developed fire suppression chemicals can be slightly modified and loaded into existing F/A-18 fire suppression canisters to provide ballistic fire protection. The final product will be a fire protection canister that will be tested in the V-22 and F/A-18 to demonstrate commonality and survivability.</p> </div>																			

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<b>B. Accomplishments/Planned Program (Cont.)</b>																			
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		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.027	0.200	0.150															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b>Advanced Threats:</b> This program will assess the vulnerability of USN/USMC aircraft materials and sensors to low-level laser, high level laser and high power microwave threats (FY 02-FY-04). In FY 04, the advanced 35mm threat will be assessed.</div>																			
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		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.025	0.000	0.030															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b>Biannual Update of R&amp;D Master Plan:</b> Supports outyear aircraft survivability R&amp;D requirements.</div>																			
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		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.000	0.100	0.150															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b>Rotorcraft Survivability Enhancement Program:</b> This program will develop and test survivability enhancements (i.e., Infrared (IR) engine suppression, new ballistic armor and fire protection) for rotorcraft to include H-1 variants, H-53, H-60 and V-22. FY 04/05 work will determine system requirements and technology suitable for demonstration.</div>																			

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety																	
<b>B. Accomplishments/Planned Program (Cont.)</b>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.100</td><td style="text-align: center;">0.050</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.000	0.100	0.050	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.000	0.100	0.050															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b><u>Survivability Analysis Methodology Update:</u></b> This program will update USN/USMC Vulveratility models (Computation of Vulnerable Area and Repair Time (COVART)), Advanced Joint Effectiveness Model (AJEM) to ensure the most up to date analysis tools. This will include updating component probability of kill (PK) data as necessary and will assess conversion methodologies such as Pro/engineer (PRO/E) Computer Aided Design (CAD) model conversion to Facet Generator (FASTGEN) used to show ballistic shot lines.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.000</td><td style="text-align: center;">5.600</td><td style="text-align: center;">5.200</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td style="text-align: center;">2</td><td style="text-align: center;">23</td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.000	5.600	5.200	RDT&E Articles Quantity			2	23
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.000	5.600	5.200															
RDT&E Articles Quantity			2	23															
<div style="border: 1px solid black; padding: 5px;"><b><u>MFOQA</u></b> Conduct an MFOQA flight demonstration on multiple fleet platforms (F/A-18, H-60, H-53, T-45, V-22, C-40) that includes: Develop requirements for MFOQA parameter selection and standardization. Develop and refine a concept of operations (CONOPS) for MFOQA in the DON. Develop an implementation plan/acquisition strategy for future fleet-wide introduction of MFOQA. RDT&amp;E articles in FY04 are required for data recorders for T-45. New Start effort for FY04.</div>																			
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		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.000															
RDT&E Articles Quantity																			

R-1 SHOPPING LIST - Item No. 31

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety

**C. PROGRAM CHANGE SUMMARY:**

Funding:	FY 2003	FY 2004	FY 2005
FY2004 President's Budget	1.817	1.829	1.553
FY2005 President's Budget	1.873	7.408	6.543
Total Adjustments	0.056	5.579	4.990
Summary of Adjustments			
Congressional program reductions			
NMCI			
Congressional rescissions			
SBIR/STTR Transfer	-0.012		
Economic Assumptions			
Reprogrammings	0.068	5.600	5.200
Misc. Adjustments		-0.021	-0.210
Subtotal	0.056	5.579	4.990

Schedule:

The MFOQA program schedule has been added in accordance with funding received in a Congressional Add for FY04.

Technical:

Not applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDTE, N / BA-4</b>		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0591 Aircraft Survivability , Vulnerability and Safety				
<b>D. OTHER PROGRAM FUNDING SUMMARY:</b>									
<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0605132D (Joint Technical Coordinating Group on Aircraft Survivability)									
PE 0603384D (Chemical/Biological Defense (Advanced Development))									
<b>E. ACQUISITION STRATEGY:</b>									
Military Flight Operations Quality Assurance (MFOQA) utilizes existing aircraft hardware, and a combination of existing Commercial Off The Shelf (COTS) and Government Off The Shelf (GOTS) ground analysis tools. A competitive contract will be awarded to meet the increased aircraft recorder requirements for the demonstration platforms. The program will integrate with existing aircraft systems that are currently post-MS III, utilizing existing contract vehicles to add MFOQA capabilities to demonstration platform systems.									
<b>F. MAJOR PERFORMERS:</b>									

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)							DATE: February 2004					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W0591 Aircraft Survivability, Vulnerability and Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Sikorsky, Connecticut	3.113								3.113	3.113
Primary Hardware Development	SS/CPFF	BAE (UAV)	0.885	0.290	10/02						1.175	1.175
Primary Hardware Development	WX	Various Govt Activities	0.050	0.150	10/02	0.473	10/03				0.673	
Systems Engineering	WX	Various	7.103	0.413	10/02	0.250	10/03	0.422	10/04	Continuing	Continuing	
Primary Hardware Development	SS/CPFF	Bell Helicopter	1.307								1.307	1.307
Primary Hardware Development	SS/CPFF	INS/Litton	0.000	0.074	07/03	0.775	12/03	0.199	11/04		1.048	1.048
Primary Hardware Development	SS/CPFF	MR&D/COI	0.140	0.302	07/03						0.442	0.442
Primary Hardware Development, M	TBD	Boeing, St. Louis, MO				0.725	03/04	0.665	11/04		1.390	1.390
Primary Hardware Development, M	TBD	TBD				0.322	03/04	0.188	11/04		0.510	0.510
Subtotal Product Development			12.598	1.229		2.545		1.474		Continuing	Continuing	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data	WX	Various	0.254	0.025	11/02						0.279	
Studies & Analyses	CPFF	TBD				0.150	11/03	0.075	11/04		0.225	0.225
GFE												
Award Fees												
Development Support, MFOQA	WX	NAWCs				2.928	12/03	2.756	12/04	Continuing	Continuing	
Software Development, MFOQA	TBD	Boeing, St. Louis, MO				1.012	03/04	0.978	11/04	Continuing	Continuing	
Subtotal Support			0.254	0.025		4.090		3.809			8.178	
Remarks:												

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## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2004		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W0591 Aircraft Survivability, Vulnerability and Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	Various	1.598	0.324	10/02			0.587	10/04	Continuing	Continuing	
Operational Test & Evaluation												
Live Fire Test & Evaluation	WX	NAWCWD		0.250	10/03	0.100	11/03					
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			1.598	0.574		0.100		0.587		Continuing	Continuing	
Remarks:												
Contractor Engineering Support MFOQA	WX	NAWCs				0.613	02/04	0.613	02/05	Continuing	Continuing	
Government Engineering Support	WX	Various										
Program Management Support	WX	Various	0.035	0.035	10/02	0.050	10/03	0.050	10/04	Continuing	Continuing	
Travel	WX	Various	0.205	0.010	10/02	0.010	10/03	0.010	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.240	0.045		0.673		0.673		Continuing	Continuing	
Remarks:												
Total Cost			14.690	1.873		7.408		6.543		Continuing	Continuing	
Remarks:												

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Exhibit R-3, Project Cost Analysis  
(Exhibit R-3, page 18 of 54)

CLASSIFICATION:

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EXHIBIT R4, Schedule Profile																								DATE:									
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME									
RDT&E, N / BA-4												0603216N Aviation Survivability												W0591 Aircraft Survivability, Vulnerability and Safety									
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
<b>Program Milestones</b>																																	
Advanced Fire Protection																																	
System Design Review																																	
Ballistic Tests																																	
Test Report																																	
UAV/SEP																																	
Test Plan Review																																	
Ground/Flight Tests																																	
Integration Report																																	
TR/SEP																																	
Tech Demo Downselect																																	
System Design Review																																	
Test Plan Review																																	
Ground/Flight Tests																																	
Integration Report																																	
Advanced Threats																																	
Low Level Laser/RF Weapons Report																																	
High Power Laser Report																																	
35mm Component Test Report																																	
Survivability Master Plan Update Reports																																	
Methodology Assessment																																	
Platform Vulnerability Report																																	
Component Probability of Kill (PK) Report																																	
Rotocraft SEP																																	
Tech Demo Downselect																																	
System Design Review																																	
Test Plan Review																																	
Ground/Flight Tests																																	
Integration Report																																	
Fixed Wing/Attack SEP																																	
Tech Demo Downselect																																	
System Design Review																																	
Test Plan Review																																	
Ground/Flight Tests																																	
Unmanned Combat Aerial Vehid SEP Tech Demo																																	
Downselect																																	

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UNCLASSIFIED

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## CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2004		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME			
RDT&E, N / BA-4	0603216N Aviation Survivability				W0591 Aircraft Survivability, Vulnerability and Safety			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Fire Protection System Design Review		1Q						
Advanced Fire Protection Ballistic Tests		3Q-4Q	1Q-2Q					
Advanced Fire Protection Test Report			2Q					
UAV/SEP Test Plan Review	1Q							
UAV/SEP Ground/Flight Tests		3Q-4Q	1Q-2Q					
UAV/SEP Integration Report		1Q-4Q	1Q-2Q					
TR/SEP Tech Demo Downselect	2Q							
TR/SEP System Design Review			1Q					
TR/SEP Test Plan Review			3Q					
TR/SEP Ground/Flight Tests				1Q				
TR/SEP Integration Report				4Q				
Advanced Threats Low Level Laser/RF Weapons Report		4Q						
Advanced Threats High Power Laser Report			3Q					
Advanced Threats 35mm Component Test Report				4Q				
Survivability Master Plan Update Reports		4Q		4Q		4Q		4Q
Methodology Assessment-Platform Vulnerability Report			4Q					
Methodology Assessment-Component Probability of Kill (PK) Report				4Q				
Rotorcraft SEP Tech Demo Downselect			1Q					
Rotorcraft SEP System Design Review					1Q			
Rotorcraft SEP Test Plan Review					3Q			
Rotorcraft SEP Ground/Flight Tests						1Q		
Rotorcraft SEP Integration Report						4Q		
Fixed Wing/Attack SEP Tech Demo Downselect					1Q			
Fixed Wing/Attack SEP System Design Review							1Q	
Fixed Wing/Attack SEP Test Plan Review							3Q	
Fixed Wing/Attack SEP Ground/Flight Tests								1Q
Unmanned Combat Aerial Vehicle SEP Tech Demo Downselect							1Q	

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Exhibit R-4a, Schedule Detail

(Exhibit R-4a, page 20 of 54)

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**CLASSIFICATION:**

[illegible]

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**Exhibit R-4a, Schedule Detail**  
(Exhibit R-4a, page 21 of 54)

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE: February 2004											
MFOQA												MFOQA																							
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
RDT&E, N / BA-5												0604215N, Standards Development												W0572, Joint Services/Navy Standard Avionics Components and Subsystems											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009						
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Acquisition Milestones																																			
MFOQA Core System									Version 1 dev								Report																		
													Ver 2 dev																						
MFOQA Parameter Selection																																			
Systems Integration																																			
Flight Demos																																			
CONOPS/Fleet Implementation Plan																																			
Production Milestones																																			
Deliveries																																			

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability				PROJECT NUMBER AND NAME W0592, Aircrfat & Ordnance Safety			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		1.966	1.346	1.248	1.266	1.517	1.546	1.577
RDT&E Articles Qty								

### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Aircraft and Ordnance Safety Program transitions transformational munitions technology to Navy and Marine Corps air weapons, to comply with the Chief of Naval Operations direction that all munitions carried aboard Navy ships be insensitive to unplanned stimuli (thermal, impact, and shock events). The Aircraft and Ordnance Safety Program also ensures the safety and protection of personnel, aircraft, ships, and operational facilities, through improved precision targeting, fail-safe ordnance, selective effects munitions and shock/blast force protection technologies.

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**Exhibit R-2a, RDTEN Project Justification**  
(Exhibit R-2a, page 23 of 54)

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability	PROJECT NUMBER AND NAME W0592, Aircraft & Ordnance Safety																	
<b>B. Accomplishments/Planned Program</b>																			
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		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.386	0.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b><u>REACTIVE MATERIALS:</u></b> Continue evaluating reactive material warheads for Insensitive Munitions (IM) compliance.  Output: IM characterization of warheads with reactive material components.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.421</td><td style="text-align: center;">0.248</td><td style="text-align: center;">0.000</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.421	0.248	0.000	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.421	0.248	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b><u>SYMPATHETIC DETONATION PROTECTION:</u></b> Demonstrate pumice as a sympathetic detonation (SD) barrier for weapon shipping containers. Refine pumice design capability for SD mitigation.  Output: New modeling capabilities and demonstrated technology to reduce the threat of SD in Joint Stand-Off Weapon (JSOW) and General Purpose (GP) bomb Munitions.</div>																			
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		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.246	0.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b><u>SIDEWINDER COMPOSITE ROCKET MOTOR DEMO:</u></b> Conduct ground and flight testing Sidewinder composite rocket motor. Conduct air to air missile IM warhead testing.  Output: IM warhead for air to air missile &amp; Flight demo of composite case weapon airframe.</div>																			

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability	PROJECT NUMBER AND NAME W0592, Aircraft & Ordnance Safety																	
<b>B. Accomplishments/Planned Program (Cont.)</b>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.646</td><td style="text-align: center;">0.379</td><td style="text-align: center;">0.000</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.646	0.379	0.000	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.646	0.379	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b><u>COMPOSITE CASE IM DEMONSTRATION:</u></b> Conduct composite case Insensitive Munitions (IM) testing demonstration. Begin long range air to surface composite case IM demonstration.  Output: Flight demo of composite case weapon airframe for air to air/ground missile.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.267</td><td style="text-align: center;">0.277</td><td style="text-align: center;">0.515</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.267	0.277	0.515	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.267	0.277	0.515															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b><u>AIR TO AIR MISSILE PROPULSION SYSTEM DEMO/TESTING:</u></b> Conduct improved air to air missile demonstration and testing.  Output: baseline IM performance of air breathing systems.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.265</td><td style="text-align: center;">0.362</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.000	0.265	0.362	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.000	0.265	0.362															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b><u>SHOCK/BLAST BARRIER PROTECTION DEMO/TESTING:</u></b> Conduct shock/blast protection demonstration and testing.  Output: Design and demonstration of shock absorbent materials for the protection of weapons and weapon platforms.</div>																			

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability	PROJECT NUMBER AND NAME W0592, Aircraft & Ordnance Safety																	
<b>B. Accomplishments/Planned Program (Cont.)</b>																			
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		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.000	0.177	0.371															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><b>IMPROVED AIR LAUNCHED WEAPONS:</b> Demonstrate improved air launched munitions for force protection and homeland defense.  Output: Demonstrate/determine the IM and safety characteristics of improved air launched munitions.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost					RDT&E Articles Quantity				
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RDT&E Articles Quantity																			
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Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			
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R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability	PROJECT NUMBER AND NAME W0592, Aircraft & Ordnance Safety

**C. PROGRAM CHANGE SUMMARY:**

Funding:	FY 2003	FY 2004	FY 2005
FY 2004 President's Budget	1.733	1.362	1.247
FY 2005 President's Budget	1.966	1.346	1.248
Total Adjustments	0.233	-0.016	0.001
Summary of Adjustments			
NMCi			
Congressional undistributed reductions			
Congressional rescissions			
SBIR/STTR Transfer			
Economic Assumptions			0.001
Reprogrammings	0.233		
Other Navy/OSD Adjustments			
Congressional Undistributed Reductions		-0.016	
Subtotal	0.233	-0.016	0.001

Schedule: Not Applicable

Technical: Not Applicable

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>			PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability			PROJECT NUMBER AND NAME W0592, Aircraft & Ordnance Safety		

**D. OTHER PROGRAM FUNDING SUMMARY:**

<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
0604802A, Department of Army 0603609N, Conventional Munitions									

**E. ACQUISITION STRATEGY:**

The Aircraft and Ordnance Safety Project acquisition strategy consists of actions (technology transition) which are intended to assist the improvement of NAVAIR-cognizant munitions. Specific task planning involves close coordination with the PMAs, field activities, and the IM and IMAD offices. Primary considerations in planning address windows of opportunity within the overall system procurement/life cycle, including milestone II (E&MD), P3I, and PIP events. Munition system design elements involving IM response risk (existing or anticipated) are analyzed in relation to proven and available IM technologies applicable to improvements in those design elements. When it is established that a system can probably be improved by implementing new technology and a window of opportunity for transition is available, the greatest overall improvement in fleet safety regarding IM response risk is the final deciding factor used to prioritize task selection for funding from limited resources.

**F. MAJOR PERFORMERS:**

R-1 SHOPPING LIST - Item No. 31

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# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RDTE, N / BA-4</b>			PROGRAM ELEMENT 0603216N, Aviation Survivability			PROJECT NUMBER AND NAME W0592, Aircrafat & Ordnance Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	WX	NAWCWD China Lake	15.944	1.936	10/02	1.316	10/03	1.216	10/04	Continuing	Continuing	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			15.944	1.936		1.316		1.216		Continuing	Continuing	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
<b>RDT&amp;E, N / BA-4</b>			0603216N, Aviation Survivability			W0592, Aircrfat & Ordnance Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation			0.052								0.052	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.052	0.000		0.000		0.000		0.000	0.052	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCWD China Lake, CA	0.120	0.030	10/02	0.030	10/03	0.032	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.120	0.030		0.030		0.032		Continuing	Continuing	
Remarks:												
Total Cost			16.116	1.966		1.346		1.248		Continuing	Continuing	
Remarks:												

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Exhibit R-3, Project Cost Analysis  
(Exhibit R-3, page 30 of 54)

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:												
APPROPRIATION/BUDGET ACTIVITY									PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME												February 2004			
RDT&E, N / BA-4									0603216N, Aviation Survivability												W0592, Aircrfat & Ordnance Safety															
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Reactive Materials																																				
Sympathetic Detonation Protection																																				
Sidewinder composite Rocket Motor																																				
Composite Case																																				
Air to Air Missile propulsion System IM Demo																																				
Shock/Blast Barrier Protection																																				
Improved Air Launched Weapons																																				

\* Not required for Budget Activities 1, 2, 3, and 6

**UNCLASSIFIED**

**CLASSIFICATION:**

[illegible]

R-1 SHOPPING LIST - Item No. 31

**UNCLASSIFIED**

**Exhibit R-4a, Schedule Detail**  
(Exhibit R-4a, page 32 of 54)



# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>FEBRUARY 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W1819 Carrier Vehicle Aircraft Fire Suppression System			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		0.921	0.740	0.588	0.597	0.734	0.748	0.764
RDT&E Articles Qty								

### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project develops improved fire fighting systems and fire protective measures for aircraft related fires on aircraft carriers, including assessment of fire properties, definition of fire threats, improvements to fire fighting agents and delivery systems, fire detection and suppression system performance evaluations, and fire fighter training improvements.

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Exhibit R-2a, RDTEN Project Justification  
(Exhibit R-2a, page 33 of 54)

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>FEBRUARY 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W1819 Carrier Vehicle Fire Suppression System																	
<b>B. Accomplishments/Planned Program</b>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.186</td><td style="text-align: center;">0.339</td><td style="text-align: center;">0.247</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.186	0.339	0.247	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.186	0.339	0.247															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; min-height: 60px;"><b>Fire Fighting Agents:</b> Evaluate new or modified agents which adequately address changing agent restrictions or technical needs. Objective is to ensure that periodic, but unpredictable, restrictions on agent production or use, primarily driven by the environmental and toxicological fields, do not negatively impact fleet safety.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.481</td><td style="text-align: center;">0.180</td><td style="text-align: center;">0.240</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.481	0.180	0.240	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.481	0.180	0.240															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; min-height: 60px;"><b>Fire Fighting Systems:</b> Evaluate system automation features and demonstrate enhancements to personnel protection equipment. Objective is to evaluate system hardware for effectiveness against updated fire threats.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 10%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">0.254</td><td style="text-align: center;">0.221</td><td style="text-align: center;">0.101</td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.254	0.221	0.101	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.254	0.221	0.101															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; min-height: 60px;"><b>Fire Fighting Tactics:</b> Evaluate reduced manning impact and resultant modifications to tactics. Provide opportunities for training during agent/system testing. Objective is to maintain emergency capabilities as reductions in manpower draw from available response crews.</div>																			

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>FEBRUARY 2004</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W1819 Carrier Vehicle Aircraft Fire Suppression System				
<b>D. OTHER PROGRAM FUNDING SUMMARY:</b>									
<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
Not applicable									
<b>E. ACQUISITION STRATEGY:</b>									
Not applicable									
<b>F. MAJOR PERFORMERS:</b>									

R-1 SHOPPING LIST - Item No1 31

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**UNCLASSIFIED**

**CLASSIFICATION:**

EXHIBIT R-2a, RDT&E Project Justification		DATE:	
		FEBRUARY 2004	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603216N Aviation Survivability	W1819 Carrier Vehicle Aircraft Fire Suppression System	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2003	FY 2004	FY 2005
Previous President's Budget:	0.941	0.748	0.677
Current BES/President's Budget	0.921	0.740	0.588
Total Adjustments	-0.020	-0.008	-0.089
Summary of Adjustments			
Congressional program reductions			
Congressional undistributed reductions		-0.008	
Congressional rescissions			
SBIR/STTR Transfer	-0.006		
Economic Assumptions			
Misc. Adjustments	-0.014		-0.089
Subtotal	-0.020	-0.008	-0.089
Schedule:			
Not applicable			
Technical:			
Not applicable			

R-1 SHOPPING LIST - Item No. 31

**UNCLASSIFIED**

**Exhibit R-2a, RD TEN Project Justification**  
(Exhibit R-2a, page 36 of 54)

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		1.724	2.374					
RDT&E Articles Qty								

### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The funding will support the shift from traditional CRT based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. The AHVS is comprised of two modules. The outer module is a binocular, multi-spectral (day, night, NVG, FLIR) visor upon which flight information and weapons symbology is projected. Communications equipment and oxygen mask are mounted to the inner module, which is custom fitted to each aircrew. The inner module (helmet) provides a stable platform upon which mission specific outer modules are attached. This concept reduces future development costs – designers would begin work from a stable, defined inner helmet platform with common attachment points. Separate helmet development would not be required for any future designs

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**Exhibit R-2a, RDTEN Project Justification**  
(Exhibit R-2a, page 37 of 54)

# UNCLASSIFIED

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>													
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System													
<b>B. Accomplishments/Planned Program</b>															
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	FY 03	FY 04	FY 05												
Accomplishments/Effort/Subtotal Cost	1.724	2.374													
RDT&E Articles Quantity															
<div style="border: 1px solid black; padding: 5px;"><b>Modular Advanced Vision System</b> The initial design of the laser projected reflective LCD has been completed. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. Currently the laser source and associated relay optics are being fine tuned to improve manufacturability.</div>															
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>					FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost				RDT&E Articles Quantity			
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R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																																																	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System																																																		
<p><b>C. PROGRAM CHANGE SUMMARY:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%; text-align: right;">FY 2003</th> <th style="width: 15%; text-align: right;">FY 2004</th> <th style="width: 15%; text-align: right;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Previous President's Budget:</td> <td style="text-align: right;">1.761</td> <td></td> <td></td> </tr> <tr> <td>Current BES/President's Budget</td> <td style="text-align: right;">1.724</td> <td style="text-align: right;">2.374</td> <td></td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-0.037</td> <td style="text-align: right; border-top: 1px solid black;">2.374</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td>    Congressional program reductions</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    Congressional undistributed reductions</td> <td></td> <td style="text-align: right;">-0.026</td> <td></td> </tr> <tr> <td>    Congressional rescissions</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    SBIR/STTR Transfer</td> <td style="text-align: right;">-0.037</td> <td></td> <td></td> </tr> <tr> <td>    Congressional increases</td> <td></td> <td style="text-align: right;">2.400</td> <td></td> </tr> <tr> <td>    Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">-0.037</td> <td style="text-align: right; border-top: 1px solid black;">2.374</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule:</p> <p style="margin-left: 20px;">Not Applicable</p>   <p>Technical:</p> <p style="margin-left: 20px;">Not Applicable.</p>						FY 2003	FY 2004	FY 2005	Funding:				Previous President's Budget:	1.761			Current BES/President's Budget	1.724	2.374		Total Adjustments	-0.037	2.374	0.000	Summary of Adjustments				Congressional program reductions				Congressional undistributed reductions		-0.026		Congressional rescissions				SBIR/STTR Transfer	-0.037			Congressional increases		2.400		Subtotal	-0.037	2.374	0.000
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SBIR/STTR Transfer	-0.037																																																			
Congressional increases		2.400																																																		
Subtotal	-0.037	2.374	0.000																																																	

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System				
<b>D. OTHER PROGRAM FUNDING SUMMARY:</b>									
<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0602201F (Aerospace Flight Dynamics)									
PE 0602233N (Mission Support Equipment)									
PE 0604264N (Aircrew Systems Development)									
PE 0604706F (Life Support Systems)									
PE 06023231F (Crew Systems and Personal Protection Technology)									
<b>E. ACQUISITION STRATEGY:</b>									
Not Applicable									
<b>F. MAJOR PERFORMERS:</b>									
Not Applicable									

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED



# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
<b>RDTE, N / BA-4</b>			0603216N Aviation Survivability			W9170 Modular Advanced Vision System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Various	Various		1.333	Various	2.374	TBD				3.707	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	WX	NAWCAD, Pax		0.261	Various						0.261	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	1.594		2.374		0.000		0.000	3.968	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
<b>RDT&amp;E, N / BA-4</b>			0603216N Aviation Survivability			W9170 Modular Advanced Vision System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NAWCAD, Patuxent River		0.130	Various						0.130	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.130		0.000		0.000		0.000	0.130	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.000			0.000	
Remarks:												
Total Cost			0.000	1.724		2.374		0.000			4.098	
Remarks:												

R-1 SHOPPING LIST - Item No. 31

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Exhibit R-3, Project Cost Analysis  
(Exhibit R-3, page 42 of 54)

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:	
							February 2004	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME			
RDT&E, N / BA-4	0603216N Aviation Survivability				W9173 Rotorcraft External Airbag			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		1.918	3.461					
RDT&E Articles Qty								

### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This effort will address the level of protection afforded and feasibility of an external airbag, and then to bring the capability to a production ready, aircraft fieldable status. While automotive airbag technology is relatively mature, this unique application will require much larger airbags, an aircraft structural integration approach for mounting the airbags in a maintainable manner, and the development of a "predictive" crash sensor. Initial impact studies (water and ground) have already been conducted. Joint efforts with the Army for aircrew systems are already underway.

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Exhibit R-2a, RDTEN Project Justification  
(Exhibit R-2a, page 43 of 54)

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>												
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag												
<b>B. Accomplishments/Planned Program</b>														
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 20%;">FY 03</th><th style="width: 20%;">FY 04</th><th style="width: 30%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">1.918</td><td style="text-align: center;">3.461</td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>				FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	1.918	3.461		RDT&E Articles Quantity			
	FY 03	FY 04	FY 05											
Accomplishments/Effort/Subtotal Cost	1.918	3.461												
RDT&E Articles Quantity														
<div style="border: 1px solid black; padding: 5px;"><u><b>Rotorcraft External Airbag</b></u> Contract has been awarded and initial modeling complete. Rotorcraft application will require larger airbags integrated into the aircraft and development of a "predictive" crash sensors. Initial impact studies (water and ground) have already been conducted.</div>														
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 20%;">FY 03</th><th style="width: 20%;">FY 04</th><th style="width: 30%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>				FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost				RDT&E Articles Quantity			
	FY 03	FY 04	FY 05											
Accomplishments/Effort/Subtotal Cost														
RDT&E Articles Quantity														
<div style="border: 1px solid black; height: 60px; width: 100%;"></div>														
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 20%;">FY 03</th><th style="width: 20%;">FY 04</th><th style="width: 30%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>				FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost				RDT&E Articles Quantity			
	FY 03	FY 04	FY 05											
Accomplishments/Effort/Subtotal Cost														
RDT&E Articles Quantity														
<div style="border: 1px solid black; height: 70px; width: 100%;"></div>														

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag

**C. PROGRAM CHANGE SUMMARY:**

	FY 2003	FY 2004	FY 2005
Funding:			
Previous President's Budget:	1.956		
Current BES/President's Budget	1.918	3.461	
Total Adjustments	-0.038	3.461	0.000
Summary of Adjustments			
Congressional program reductions			
Congressional undistributed reductions		-0.039	
Congressional rescissions			
SBIR/STTR Transfer	-0.038		
Congressional increases		3.500	
Subtotal	-0.038	3.461	0.000

Schedule:

Not Applicable

  
  
  

Technical:

Not Applicable.

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag			
<b>D. OTHER PROGRAM FUNDING SUMMARY:</b>								
<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u> Total Cost
PE 0602201F (Aerospace Flight Dynamics)								
PE 0602233N (Mission Support Equipment)								
PE 0604264N (Aircrew Systems Development)								
PE 0604706F (Life Support Systems)								
PE 06023231F (Crew Systems and Personal Protection Technology)								
<b>E. ACQUISITION STRATEGY:</b>								
Not Applicable								
<b>F. MAJOR PERFORMERS:</b>								
Not Applicable								

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RD&amp;E, N / BA-4</b>			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Various	Various		1.000	Various	3.461	TBD				4.461	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	WX	NAWCAD, Pax		0.914	Various						0.914	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	1.914		3.461		0.000		0.000	5.375	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
<b>RDT&amp;E, N / BA-4</b>			0603216N Aviation Survivability			W9173 Rotorcraft External Airbag						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River		0.004	Various						0.004	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.004		0.000		0.000			0.004	
Remarks:												
Total Cost			0.000	1.918		3.461		0.000			5.379	
Remarks:												

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

Exhibit R-3, Project Cost Analysis  
(Exhibit R-3, page 48 of 54)



# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9346 Equipment Life Extension Program			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost			2.472					
RDT&E Articles Qty								

### A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This effort will fund an equipment life extension laboratory for definition of systems no longer procurable that are critical to functionality of weapon systems. By equipping currently existing in house laboratories to maintain, modify, and update existing, non supported systems a significant cost reduction will be realized. The alternative of modifying and updating aircraft and weapons systems to accept new technologies is cost prohibitive.

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

Exhibit R-2a, RDTEN Project Justification  
(Exhibit R-2a, page 49 of 54)

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>													
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9346 Equipment Life Extension Program													
<b>B. Accomplishments/Planned Program</b>															
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">2.472</td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>					FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		2.472		RDT&E Articles Quantity			
	FY 03	FY 04	FY 05												
Accomplishments/Effort/Subtotal Cost		2.472													
RDT&E Articles Quantity															
<div style="border: 1px solid black; padding: 5px;"><b>Equipment Life Extension Program</b> This effort will fund an equipment life extension laboratory for definition of systems no longer procurable that are critical to functionality of weapon systems. By equipping currently existing in house laboratories to maintain, modify, and update existing, non supported systems a significant cost reduction will be realized.</div>															
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>					FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost				RDT&E Articles Quantity			
	FY 03	FY 04	FY 05												
Accomplishments/Effort/Subtotal Cost															
RDT&E Articles Quantity															
<div style="border: 1px solid black; height: 60px; width: 100%;"></div>															
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td></tr><tr><td>RDT&amp;E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>					FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost				RDT&E Articles Quantity			
	FY 03	FY 04	FY 05												
Accomplishments/Effort/Subtotal Cost															
RDT&E Articles Quantity															
<div style="border: 1px solid black; height: 70px; width: 100%;"></div>															

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9346 Equipment Life Extension Program	
<b>C. PROGRAM CHANGE SUMMARY:</b>			
Funding:	FY 2003	FY 2004	FY 2005
Previous President's Budget:			
Current BES/President's Budget		2.472	
Total Adjustments		2.472	0.000
Summary of Adjustments			
Congressional program reductions			
Congressional undistributed reductions		-0.028	
Congressional increases		2.500	
Subtotal	0.000	2.472	0.000
Schedule:			
Not Applicable			
Technical:			
Not Applicable.			

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: <b>February 2004</b>			
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-4</b>		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability		PROJECT NUMBER AND NAME W9346 Equipment Life Extension Program					
<b>D. OTHER PROGRAM FUNDING SUMMARY:</b>									
<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0602201F (Aerospace Flight Dynamics)									
PE 0602233N (Mission Support Equipment)									
PE 0604264N (Aircrew Systems Development)									
PE 0604706F (Life Support Systems)									
PE 06023231F (Crew Systems and Personal Protection Technology)									
<b>E. ACQUISITION STRATEGY:</b>									
Not Applicable									
<b>F. MAJOR PERFORMERS:</b>									
Not Applicable									

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RDTE, N / BA-4</b>			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9346 Equipment Life Extension Program						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	TBD	TBD				2.472	TBD				2.472	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	0.000		2.472		0.000		0.000	2.472	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: <b>February 2004</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDTE, N / BA-4</b>				PROGRAM ELEMENT 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W9346 Equipment Life Extension Program				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel											0.000	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.000			0.000	
Remarks:												
Total Cost			0.000	0.000		2.472		0.000			2.472	
Remarks:												

R-1 SHOPPING LIST - Item No. 31

UNCLASSIFIED

Exhibit R-3, Project Cost Analysis  
(Exhibit R-3, page 54 of 54)